

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A semiconductor device comprising
 - a semiconductor component comprising a power laser diode bar, disposed on a cooling element;
 - said cooling element containing in its interior a cooling channel serving to conduct a coolant and comprising in at least one region microstructures for effective heat transfer to said coolant, wherein said semiconductor component substantially completely overlaps said region of said cooling channel comprising said microstructures, and disposed between said semiconductor component and said cooling element is an intermediate support so arranged and configured that it compensates for mechanical stresses between said semiconductor component and said cooling element occurring as a result of differing thermal expansions of said semiconductor component and said cooling element; and
 - a beam-collimating device, wherein the laser diode bar and the beam-collimating device are disposed on a common surface of the cooling element.
2. (Previously Presented) The semiconductor device as set forth in claim 1, wherein said intermediate support has a high modulus of elasticity such that it compensates for the mechanical stresses substantially within the elastic strain regime.
3. (Previously Presented) The semiconductor device as set forth in claim 1, wherein said intermediate support has a higher thermal conductivity than copper, particularly a thermal conductivity that is about 1.5 times higher than that of copper.

4. (Previously Presented) The semiconductor device as set forth in claim 1, wherein the thermal expansion coefficient of said intermediate support is adapted to the thermal expansion coefficient of said semiconductor component.

5. (Previously Presented) The semiconductor device as set forth in claim 1, wherein said semiconductor component is connected by means of a hard solder to said intermediate support.

6. (Previously Presented) The semiconductor device as set forth in claim 1, wherein said intermediate support is connected by means of a hard solder to said cooling element.

7. (Previously Presented) The semiconductor device as set forth in claim 5, wherein the hard solder comprises a AuSn-based solder material.

8. (Previously Presented) The semiconductor device as set forth in claim 1, wherein said intermediate support is fabricated of molybdenum, tungsten, a copper/molybdenum alloy or a copper/tungsten alloy, preferably having a copper content of about 10% to about 20%.

9. (Previously Presented) The semiconductor device as set forth in claim 1, wherein said intermediate support comprises a diamond composite material, particularly a diamond/metal matrix material, which particularly contains at least one of the material combinations diamond/copper, diamond/cobalt and diamond/aluminum.

10-11. Canceled.

12. (Previously Presented) The semiconductor device as set forth in claim 1, wherein said cooling element is composed of plural stacked, areally interconnected layers, a portion thereof being structured, to form in the interior of said cooling element said cooling channel for conducting said coolant.

13. (Currently Amended) The semiconductor device as set forth in claim ~~10~~ 12, wherein the layers of said cooling element are formed at least in part by the etching of structured copper foils.

14. (Previously Presented) The semiconductor device as set forth in claim 1, wherein the length of the micro structured region is at least equal to or greater than the length of said semiconductor component and said microstructured region completely overlaps said semiconductor component in the lengthwise direction.

15. (Previously Presented) The semiconductor device as set forth in claim 1, wherein the width of said microstructured region is equal to or greater than the width of said semiconductor component and said microstructured region completely overlaps said semiconductor component in the widthwise direction.

16. (Previously Presented) The semiconductor device as set forth in claim 1, wherein the beam-collimating device comprises a microlens.

17. (Previously Presented) A semiconductor device, comprising:

a semiconductor component disposed on a cooling element, the cooling element comprising an interior cooling channel configured to conduct coolant, and comprising microstructures configured to transfer heat to the coolant; and

an intermediate support disposed between the semiconductor component and the cooling element, the intermediate support being configured to compensate for mechanical stresses between the semiconductor component and the cooling element as a result of differing thermal expansions of the semiconductor component and the cooling element,

wherein the semiconductor component substantially completely overlaps a region of the cooling channel that comprises the microstructures, and the intermediate support is formed of a diamond/metal matrix material that comprises at least one metal selected from the group consisting of copper, cobalt, and aluminum.

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18. (New) The semiconductor device as set forth in claim 6, wherein the hard solder comprises a AuSn-based solder material.